

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A ~~vertical~~ semiconductor device structure, comprising:

a substrate defining a substantially horizontal plane;

a source region;

a drain region;

a gate electrode projecting vertically from disposed on said substrate and being electrically insulated therefrom, said gate electrode positioned vertically between said source region and said drain region;

at least one semiconducting nanotube including a first end electrically coupled with said source region, a second end electrically coupled with said drain region, and a length extending vertically through said gate electrode between opposite said first and second ends and being electrically insulated from said gate electrode, said gate electrode gating said length when a voltage is applied to said gate electrode to define a channel region for current flow from said source to said drain;

~~a gate dielectric electrically insulating said at least one semiconducting nanotube from said gate electrode;~~

~~a source electrically coupled with said first end of said at least one semiconducting nanotube; and~~

~~a drain electrically coupled with said second end of said at least one semiconducting nanotube.~~

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2. (Original) The semiconductor device structure of claim 1 wherein said source is composed of a catalyst material effective for growing said at least one semiconducting nanotube.
3. (Currently Amended) The semiconducting semiconductor device structure of claim 1 wherein said drain is composed of a catalyst material effective for growing said at least one semiconducting nanotube.
4. (Original) The semiconductor device structure of claim 1 further comprising:
an insulating layer disposed between said drain and said gate electrode for electrically isolating said drain from said gate electrode.
5. (Original) The semiconductor device structure of claim 1 further comprising:
an insulating layer disposed between said source and said gate electrode for electrically isolating said source from said gate electrode.
6. (Currently Amended) The semiconducting semiconductor device structure of claim 1 wherein said at least one semiconducting nanotube is composed of arranged carbon atoms.
7. (Cancelled)
8. (Currently Amended) The semiconducting semiconductor device structure of claim 1 wherein said at least one semiconducting nanotube is oriented substantially perpendicular to said horizontal plane.
9. (Currently Amended) The semiconducting semiconductor device structure of claim 1 further comprising:
a plurality of semiconducting nanotubes extending vertically through said gate electrode.

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10. (Currently Amended) The semiconducting semiconductor device structure of claim 1 wherein said gate dielectric is disposed on said at least one semiconducting nanotube.

11-24. (Cancelled)

25. (Currently Amended) A semiconductor device structure, comprising:

a substrate ~~defining a substantially horizontal plane;~~

[[a]] an electrically-conductive first plate disposed on said substrate,

~~at least one nanotube projecting vertically from said first plate and electrically coupled with said first plate;~~

[[a]] an electrically-conductive second plate positioned disposed vertically above said first plate;

at least one nanotube having an end electrically coupled with said first plate and a length that extends from said end vertically into said second plate; and

a dielectric layer electrically isolating disposed between said second plate [[from]] and said first plate, [[and]] said dielectric layer coating said length of said at least one carbon nanotube such that said at least one nanotube is electrically isolated from said second plate.

26. (Original) The semiconductor device structure of claim 25 wherein said at least one nanotube has a conducting molecular structure.

27. (Original) The semiconductor device structure of claim 25 wherein said at least one nanotube has a semiconducting molecular structure.

28. (Currently Amended) The semiconducting semiconductor device structure of claim 25 wherein said dielectric layer ~~defines a coating that encases said at least one nanotube.~~

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29-32. (Cancelled)

33. (New) The semiconductor device structure of claim 1 wherein said gate electrode has a thickness approximately equal to the length of said at least one semiconducting nanotube.

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